STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86
(For candidates admitted from the academic year 2015– 2016 and thereafter)
SUBJECT CODE: 15EC/AC/MM25
B. A. DEGREE EXAMINATION, APRIL 2018
BRANCH IV - ECONOMICS
SECOND SEMESTER

COURSE : ALLIED – CORE
PAPER : MATHEMATICAL METHODS FOR ECONOMICS
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A

ANSWER ANY TEN QUESTIONS. EACH ANSWER NOT TO EXCEED 50 WORDS:
(10 X 2 = 20)

1. Define Cartesian System.
2. Write the distance formula?
3. Define Matrix.
4. Write the Hawkin-Symon condition of input output model.
5. What do you mean by Variable?
6. $Y=5x^2+6\log x-8\sqrt{x}$ differentiate with respect to x.
7. If P=6x-2 calculate revenue.
8. What do you mean by Homogeneous function?
9. Write the conditions for minimization?
10. When R=6x-2, C=4x+6 calculate profit.
11. What do you mean by transposes of a matrix?
12. What is elasticity of demand?

SECTION – B

ANSWER ANY FIVE QUESTIONS. EACH ANSWER NOT TO EXCEED 400 WORDS:
(5 X 8 = 40)

13. Explain the unitary Matrix.
14. List out the properties of determinants.
15. Calculate

$$|A| = \begin{vmatrix} 1 & 2 & 4 \\ -3 & 1 & 2 \\ 2 & 0 & -4 \end{vmatrix}$$

16. If $y=(8x^2+4x-2)^3$ differentiate with respect to x.
17. $Z=6x^2-7y^2+14xy-6x^2y+7xy^3$ Calculate Z_{xx}, Z_{xy}, Z_{yy} and Z_{yx}.
18. Explain the relationship between average and marginal cost.
19. State the production function with two variable input.
20. If $Y=x^3-3x+1$ Calculate the maxima or minima of the function.

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SECTION – C

ANSWER ANY TWO QUESTIONS. EACH ANSWER NOT TO EXCEED 1000 WORDS (2 X 20 =40)

21. For the following constrain calculate x, y, z using Cramer's Rule.

    $2x - 3y + 5z = 11$

    $5x + 2y - 7z = -12$

    $-4x + 3y + z = 5$

22. Explain the input output analysis and its limitations.

23. If the total cost function is $C=1/3Q^3-3Q^2+9Q$, find the level of output at which AC will be minimum and find the minimum AC.

24. A Monopolist manufacturer has developed a new design for solar collection panels. Marketing studies have indicated that annual demand for panels will depend on price charged. The demand function for the panels has been estimated has $q = 250000 – 200\ p$, where q is the number of units demanded each year and p is the price in rupees. The total cost of producing is represented by the function: $C = 500000+250q+0.003q^2$.

    (a) Using the marginal approach, determine the profit maximizing level of output and price.

    (b) What is the maximum profit?

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